

**Agency: Commerce, Community and Economic Development****Grants to Municipalities (AS 37.05.315)****Grant Recipient: Whittier****Project Title:****Whittier - Whittier Creek Levee Stabilization****State Funding Requested: \$ 150,000****House District: 32 - P**

One-Time Need

**Brief Project Description:**

The Whittier Creek Levee was built in the 1940s to divert the flow of the Whittier Creek, a dynamic glacial stream, away from the town of Whittier. Recent high water events have caused erosion along the levee and larger floods are now able to overtop the aging levee presenting significant life and property safety concerns.

**Funding Plan:****Total Cost of Project: \$750,000**

	<u>Funding Secured</u>		<u>Other Pending Requests</u>		<u>Anticipated Future Need</u>	
	<i>Amount</i>	<i>FY</i>	<i>Amount</i>	<i>FY</i>	<i>Amount</i>	<i>FY</i>
Federal Funds			\$600,000	08		
Total			\$600,000			

*Explanation of Other Funds:**local contributions and in kind services***Detailed Project Description and Justification:**

Stabilization of the Whittier Creek Levee is needed to safeguard lives and property from and imminent hazard of overtopping and failure of the levee during a serious flooding. Whittier Creek is a high gradient stream that flows behind the main development of Whittier. If the levee were to overtop, the flood waters could seriously impact the school, primary residential development, Alaska Railroad yard, bulk fuel storage, state highway and railway bridges and other private and public facilities

The City of Whittier is working together with the Army Corps of Engineers, the USDA Natural Resources Conservation Service and the Whittier Watershed Council to secure funding to address the stability issues of the aging Whittier Levee. Federal assistance has been requested under the Emergency Watershed Protection project to repair damages resulting from recent storms, including significant seepage of the Whittier Creek Levee and build up of sediment in the stream channel. A funding match of 25% is required to secure the federal EWP funds.

**Project Timeline:**

Immediately

**Entity Responsible for the Ongoing Operation and Maintenance of this Project:**

City of Whittier

**Grant Recipient Contact Information:**

Contact Name: Mark Earnest, Whittier City Manager

Phone Number: 907-472-2327

Address: PO Box 608, Whittier, AK 99693

Email:

Has this project been through a public review process at the local level and is it a community priority? ☒ Yes ☐ No



# THE CITY OF WHITTIER

*Gateway to Western Prince William Sound*

P.O. Box 608 • Whittier, Alaska 99693 • (907) 472-2327 • Fax (907) 472-2404

March 31, 2008

Robert N. Jones, State Conservationist  
USDA - Natural Resources Conservation Service  
800 W. Evergreen Avenue, Suite 100  
Palmer, AK 99645

Dear Mr. Jones:

The City of Whittier requests Federal assistance under the provisions of Section 216, Public Law 516, to restore damages sustained in our community by a series of storms that has resulted in significant seepage of the Whittier Creek Levee and the build up of sediment in the stream channel. This work is needed to safeguard lives and property from an imminent hazard of overtopping and failure of the levee during a serious flood. Whittier Creek is a high gradient stream that flows behind the main development of Whittier.

The levee was constructed by the US Army in the 1940's in order to stabilize the creek channel. If the levee were to overtop, the flood waters could seriously impact the community's school, primary residential development, Alaska Railroad Whittier Yard, bulk fuel storage, state highway and rail bridges, and other critical infrastructure and private and public facilities.

We understand, as sponsors of an Emergency Watershed Protection project that our responsibilities will include acquiring land rights and any permits needed to construct, and if required, to operate and maintain the proposed measures. We are prepared to provide the necessary local contribution of the cost of construction work in dollars or in-kind services. The City understands that the NRCS will not work on the levee as it was built by the Army.

I will serve as the administrative and technical contact person in our organization. Please feel free to contact me at 907-472-2327 x 103 or [citymanager@ci.whittier.ak.us](mailto:citymanager@ci.whittier.ak.us) for any additional information that you might need in assessing our request.

Sincerely,

Mark Earnest  
City Manager

## **Whittier Creek Channel Assessment**

**Bill MacFarlane, Hydrologist**

**Chugach National Forest**

**September 5, 2007**

The following are some of my observations from the September 5, 2007 field visit to Whittier Creek and the levee upstream of the town of Whittier.

Whittier Creek is a dynamic glacial stream that flows from Whittier Glacier steeply toward the town of Whittier and Passage Canal. Whittier lies on an alluvial fan created by Whittier Creek, and a levee was constructed 50 years ago near the head of this fan to divert flows toward the north and away from the town of Whittier. The channel now flows along the north side of the fan. Historically, the stream migrated back and forth across the fan.

Whittier Creek carries very high sediment loads. With its glacial source, high gradient, and high flow volumes, it can transport large boulders during floods. Recent high water events have caused erosion along the levee in a few places, and large floods are now able to overtop the levee in one area.

The most problematic area is at the upstream end of the levee, where the channel in its bedrock gully turns left as it is deflected by the levee. The high gradient of the channel here allows it to transport large boulders during high flows. Bank erosion has worsened in the last few years on the river-right side (on the levee). The stress along the right bank is very high because of the curvature as the channel goes around this bend. The material in the levee is a mixture of gravel and larger rocks – the gravel is easily eroded. The top of the levee is only about 1 to 2 feet above the level of bankfull (bankfull represents the height of the flood that occurs every 1 or 2 years). If nothing is done, the levee will continue to erode, eventually increasing the chances that water will overtop the levee. A solution could be to increase the height of the levee in this area and stabilize the bank along this corner. Stabilization of the bank could require very large boulders or a more aggressive engineered approach.

Further downstream, where the second waterfall enters the channel, an area of the river-right bank is eroding. Sediment input from the second waterfall is deposited along the river-left side, pushing the flow toward the right and causing increased stress on this bank. Although the channel is well incised at this point, with little chance of overtopping the levee, this bank will continue to erode during high flows. The material in the bank is largely gravel (with pieces of junk metal further downstream), and the top of the bank is not vegetated. A solution could be to stabilize the toe of this slope with large boulders, and slope the bank back to a more natural angle so that vegetation could be established to stabilize the slope. The difficulty lies in finding a way to stabilize the toe with material that is large enough that it does not get washed away during high flows. Boulders placed at the toe of the slope should also extend down into the channel bed to prevent high flows from scouring beneath and undermining the boulders at the toe of the slope.

Downstream of this, the channel flows through 2 areas that were excavated as ponds. These areas have completely filled with gravel. The gravel bars are almost built up to the approximate level of the natural floodplain. It is not likely that the gravel bars will build higher than this natural floodplain elevation, and any additional gravel will be transported through these "pond" reaches. In the first pond area, the right bank is well armored and fairly stable. The gravel bar/floodplain in these areas provides a "relief valve" so that flood flows can spread out over the floodplain, decreasing the shear stress on the banks. High flow events will likely cause periodic channel changes in this area.

Whittier Creek will always be a very dynamic channel, and changes will continue to occur. Major changes can occur as large runoff events or debris flows transport large quantities of sediment into the reach. Because of the dynamic nature of this system, fixes to the levee may have to be of a temporary nature, and continued maintenance may be required.

Bill MacFarlane  
9/5/07

April 17, 2008

The Honorable Sarah Palin  
Governor  
State of Alaska  
P.O. Box 110001  
Juneau, Alaska 99811-0001

RE: Whittier Levee

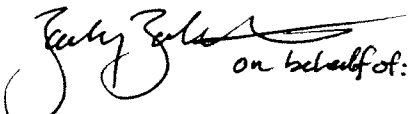
Dear Governor Palin,

We are writing in support of the \$150,000 appropriation for the emergency repair of the Whittier Creek levee. As a result of a series of storms, our levee has been damaged resulting in significant seepage and build up of sediment in the stream channel. The requested funds are needed to complete repairs to safeguard lives and property from an imminent hazard of overtopping and failure of the levee during a serious flood. Whittier Creek is a high gradient stream that flows behind the main development in Whittier.

The levee was constructed by the US Army in the 1940's in order to stabilize the creek channel. If the levee were to overtop, the flood waters could seriously impact the community's school, primary residential development, Alaska Railroad's Whittier Yard, bulk fuel storage, state highway and rail bridges, and other critical infrastructure.

Rep. Mike Hawker has been very helpful in this effort and we hope you will approve the \$150,000 appropriation. Thank you in advance for your support.

Sincerely,

 on behalf of:

Charlene Arneson, Chair  
Whittier Watershed Council

cc: Rep. Mike Hawker; Sen. Con Bunde; City of Whittier

## WHITTIER CREEK LEVEE

### **50 years ago:**

Whittier was established as a military base, housing 5,000 troops. Back then "Whittier Creek" wandered from one side to the other of the alluvial fan. Seeing a need to channel the water to one side, the army built the Whittier levee in the area that we see it today. The levee helped to curb the creeks wanderings but did not contain it completely. In 1994-95 the creek took out the Alaska Railroad bridge, weakening Whittier's only bridge out of town.

### **1998-2002:**

Passage Canal Development LLC leased land and developed a parking lot and campground. In the course of this work, they contained the creek, which was undercutting the only road connecting the residents to the harbor, and rip-rapped the banks along its half-mile boundary to stabilize the creek.

### **Over the course of time:**

The levee at the head of the creek was not included in the Passage Canal Development work, so it is in the same state as when constructed 50 years ago. The banks have eroded taking much of its protection capability, causing the creek to leak progressively more each year. The stream channel is filling with large boulders and sediment, sometimes permitting the water to come within 6 inches of overflowing, eating away at the toe of the levee.

### **Today:**

Whittier's Alaska Railroad yard is a major railroad freight terminal. Alaska Railroad and Alaska Marine Lines barge a major amount of goods into Alaska through Whittier. The ferry terminal in Whittier services ferries carrying travelers not only from Prince William Sound, but statewide communities, the contiguous states and beyond. The cruise ship docks accommodate nearly 750,000 visitors each year. Whittier's harbors house hundreds of boaters that visit Whittier and Prince William Sound. Any disruption to these facilities would impact Alaskans and visitors to Alaska alike.

### **What if the Levee Breaks?**

The residents of Whittier question the ability of the levee to provide protection for many key facilities in the path of the water. First in the path is Whittier Community School, then the 15-story, 198 unit Begich Towers, which house city offices, the police department, clinic, post office, church and other assorted businesses, as well as homes for a great majority of the city's residents. Also potentially affected are the campground and parking lot, Alaska Railroad yard (where a good part of the freight transits in and out of Alaska), the cruise ship dock, the state ferry dock, two small boat harbors and most of the community's businesses. A levee breach has the potential to effectively wipe out Whittier!

### **Request:**

The City of Whittier and the Whittier Watershed Council are partners with the US Army Corps of Engineers in hopes the Corps can expand its current plans in the community to assess the Whittier Creek levee. The Corps of Engineers believes all of Whittier's watershed concerns are interrelated and would benefit greatly from a general Corps assessment. The Corps of Engineers will contribute 50 percent of the cost of the watershed study and we are working to find money to provide the 25-50% match (about \$150,000) required just for the study of the levee.

### **Tomorrow:**

Each year we see greater changes to the levee. Spring break-up, summer rains and the great fall storms take their toll. How long will the levee hold? It may take a few years for it to breach or it could be this year. We need your help; we need money for our project. The costs of cleanup and reconstruction will be much greater after Whittier Creek breaches. It is a game of chance trying to guess how long the levee will hold.

Will there be help in time? It is anyone's guess.